Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously presented) A method of producing an object data set describing a straightened reformat from an original object data set containing an elongated subject, from which an initial cross sectional slice is created transverse to the elongated subject and at least one further cross sectional slice is created transverse to the elongated subject, the method comprising:

determining a reference direction in each cross sectional slice; and

creating the object data set by concatenating the cross sectional slices, each cross sectional slice being orientated so that the reference directions in the cross sectional slices are aligned.

2. (Previously presented) The method as in claim 1, wherein determining the reference direction in each cross sectional slice comprises:

determining an initial reference direction in the initial cross sectional slice, and

deriving a reference direction in the at least one further cross sectional slice from the initial reference direction by propagation.

3. (Previously presented) The method as in claim 2, wherein the determined initial reference direction is propagated directly into each of the at least one further slice.

4. (Previously presented) The method as in claim 2, wherein the initial and the at least one further cross sectional slices form a consecution of successive cross sectional slices and the reference direction in each of the at least one further cross sectional slice is derived from the reference direction in a preceding slice by propagation.

5. (Previously presented) The method as in claim 1, wherein determining the reference direction in each cross sectional slice comprises:

determining a first reference direction in the initial cross sectional slice,

independently determining a final reference direction in a final cross sectional slice, so that there is at least one intervening cross sectional slice between the initial and the final cross sectional slices,

deriving the reference direction in each of the at least one intervening cross sectional slice by optimizing a change of reference direction throughout the at least one intervening cross sectional slice while using the reference directions in the initial and final cross sectional slices as boundary conditions.

6. (Previously presented) The method as in claim 5, wherein the change of reference direction is optimized by minimizing a change in relative orientation between the reference directions of consecutive cross sectional slices from the first reference direction in the initial cross sectional slice to the final reference direction in the final cross sectional slice.

7. (Previously presented) The method as in claim 5, wherein an additional cross sectional slice is chosen from the at least one intervening cross sectional slice between the initial and the final cross sectional slices, an additional reference direction is determined in the additional cross sectional slice, the reference directions in the intervening cross sectional slices between the initial and the additional cross sectional slice and between the additional and the final cross sectional slices are derived by optimizing the change of reference direction throughout the cross sectional slices while using the first, additional and final reference directions as boundary conditions.

8. (Previously presented) The method as in claim 1, further comprising:

aligning the cross sectional slices within the object data set describing the straightened reformat in such a way that their respective reference directions are at the same angular orientation within the object data set.

9. (Previously presented) The method as in claim 1, further comprising:

displaying object data set describing the straightened reformat

10. (Canceled)

11. (Canceled)

12. (Previously presented) A method of creating an object data set describing a straightened reformat from an original object data set containing an elongated subject, the method comprising:

creating a plurality of cross sectional slices transverse to the elongated subject;

determining a plurality of reference directions corresponding to the plurality of cross sectional slices, including determining an initial reference direction associated with an initial cross sectional slice of the plurality of cross sectional slices and deriving reference directions corresponding to remaining cross sectional slices of the plurality of cross sectional slices from the initial reference direction by propagation;

concatenating the plurality of cross sectional slices; and

aligning the plurality of reference directions corresponding to the plurality of cross sectional slices,

wherein the plurality of cross sectional slices form a consecution of successive cross sectional slices, and the reference directions corresponding to the remaining cross sectional slices are each derived from the reference direction corresponding to a preceding cross section al slice by propagation.

13. (Previously presented) A method of creating an object data set describing a straightened reformat from an original object data set containing an elongated subject, the method comprising:

creating a plurality of cross sectional slices transverse to the elongated subject;

determining a plurality of reference directions corresponding to the plurality of cross sectional slices;

concatenating the plurality of cross sectional slices; and

aligning the plurality of reference directions corresponding to the plurality of cross sectional slices,

wherein determining the plurality of reference directions comprises:

determining a first reference direction corresponding to a first cross sectional slice of the plurality of cross sectional slices;

independently determining a final reference direction corresponding to a final cross sectional slice of the plurality of cross sectional slices, at least one intervening cross sectional slice being between the first cross sectional slice and the final cross sectional slice; and

deriving a plurality of intervening reference directions corresponding to a plurality of intervening cross sectional slices by optimizing changes associated with the intervening reference directions, using the first reference direction and the final reference direction as boundary conditions.

14. (Previously presented) The method of claim 13, wherein optimizing the changes associated with the intervening reference directions comprises minimizing a change in relative orientation between the reference directions of consecutive cross sectional slices from the first reference direction corresponding to the first cross sectional slice to the final reference direction corresponding to the final cross sectional slice.

15. (Previously presented) The method of claim 13, further comprising:

selecting an additional cross sectional slice from the plurality of intervening cross sectional slices and determining an additional reference direction corresponding to the additional cross sectional slice,

wherein the intervening reference directions corresponding to the remaining intervening cross sectional slices between the first cross sectional slice and the additional cross sectional slice and between the additional cross sectional slice and the final cross sectional slice are derived by optimizing changes associated with the intervening reference directions, using the

first reference direction, the additional reference direction and the final reference direction as boundary conditions.

16. (Previously presented) A method of creating an object data set describing a straightened reformat from an original object data set containing an elongated subject, the method comprising:

creating an initial cross sectional slice and at least one further cross sectional slice transverse to the elongated subject;

determining a reference direction in each cross sectional slice;

concatenating the cross sectional slices; and

aligning the cross sectional slices within the object data set describing the straightened reformat in such a way that the respective reference directions are at the same angular orientation within the object data set.

17. (Previously presented) The method of claim 16, wherein determining the reference direction in each cross sectional slice comprises:

determining an initial reference direction in the initial cross sectional slice, and deriving a reference direction in the at least one further cross sectional slice from the initial reference direction by propagation

18. (Previously presented) The method as in claim 17, wherein the determined initial reference direction is propagated directly into each of the at least one further cross sectional slice.

19 (New) The method as in claim 1, wherein creating the object data set includes stacking the cross sectional slices one on top of another.

20 (New) The method of claim 1, wherein each of the cross sectional slices is approximately centered around the elongated object.

21. (New) The method of claim 1, wherein the reference directions for at least two of the cross sectional slices are angularly offset from each other.

22. (New) The method as in claim 21, wherein creating the object data set includes orienting the at least two cross sectional slices to align the reference directions of the at least two cross sectional slices.